

Comments on *Leptogamasus* Trägårdh sensu Juvara-Bals, 1981 with the description of *Leptogamasus* (*Holoperigamasus*) *tabacarui* sp. n. (Acari: Gamasida: Parasitidae)

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Comments on *Leptogamasus* Trägårdh sensu Juvara-Bals, 1981 with the description of *Leptogamasus* (*Holoperigamasus*) *tabacarui* sp. n. (Acari: Gamasida: Parasitidae). - A key to the genera *Tomeogamasus* Athias-Henriot, 1971, *Ernogamasus* Athias-Henriot, 1971, *Leptogamasus* Trägårdh, 1936 and its subgenera are given. Notation of idiosoma chaetotaxy and adenotaxy after Athias-Henriot (1967) and Lindquist and Evans (1965) are illustrated. *Leptogamasus* (*Holoperigamasus*) *tabacarui* sp. n. from Romania is described and illustrated.

Key-words: Acari - Gamasida - Parasitidae - *Leptogamasus* - key to genera and subgenera - new species.

INTRODUCTION

The genus *Leptogamasus* Trägårdh, 1936 includes predatory mites living in leaf litter, upper soil horizons and widely distributed in the Holarctic region. Athias-Henriot (1972) mentioned the importance of some species of the genus *Leptogamasus* as typical inhabitants of forest soil. She presumed that this group also has high value for biogeographically studies and that many new species will be found from eastern and southern Europe.

Unfortunately there are two difficulties in studying Holarctic *Leptogamasus*: the lack of data from many European countries and the confusing generic concept of *Leptogamasus*.

Three subdivisions (=“types d’organisations”) of the genus *Leptogamasus* Trägårdh, 1936 based primarily on the presence or absence of some opisthosomal setae, were recognized by Athias-Henriot (1967). In 1971 Athias-Henriot attributed her “types d’organisation” to the following subgenera: “types d’organisation *parvulus* = *Leptogamasus* sensu stricto; ”type d’organisation” *leruthi* = *Ernogamasus* Athias-Henriot, 1971; ”type d’organisation” *falculiger* = *Tomeogamasus* Athias-Henriot, 1971.

In my generic concept (Juvara-Bals, 1981) I followed the subdivisions of Athias-Henriot (1967, 1971) but I considered her former subgenera as genera and divided the genus *Leptogamasus* Trägårdh into three subgenera corresponding to the species groups = “sections” already established and characterized by Athias-Henriot (1967) and Juvara-Bals (1981). Diagnoses of these genera and subgenera were given.

Karg (1993) also divided the genus *Leptogamasus* into two subgenera, but his *Valigamasus* Karg, 1993 is a synonym of *Ernogamasus* Athias-Henriot, 1971 as established by Juvara-Bals (2002). In 1981 I mentioned the existence of a new species belonging to the subgenus *Leptogamasus* (*Holoperigamasus*) Juvara-Bals, 1981 but no description was given; this new species *Leptogamasus* (*Holoperigamasus*) *tabacarui* sp. n. is finally described in this paper. A key to the genera and subgenera formerly included in *Leptogamasus* Trägårdh, 1936 is given.

MATERIAL AND METHODS

Mites were sampled from leaf litter and humus layer of beech forest in Romania (Southern Carpathian Mountains). The holotype and paratypes are deposited in the collection of the Muséum d'histoire naturelle, Geneva (MHNG).

Morphological terminology is based on Evans and Till (1979). Concerning the setal notation of the idiosoma, the two systems currently in use are one proposed by Hirschmann (1957), and the other by Lindquist & Evans (1965). The descriptions of *Leptogamasus* by Athias-Henriot (1967, 1972) and by Juvara-Bals (1981) followed the terminology of the idiosoma chaetotaxy as in Athias-Henriot (1967). Karg (1993) followed Hirschmann's system. More recently revisions of Parasitidae by Hyatt (1980), Juvara-Bals (2002), Al-Atawi *et al.* (2002) adopted the notation system of Lindquist & Evans (1965). Presently the latter one is applied to a greater extend in many descriptive studies of gamasid mites. Notational equivalents of both systems are available in Lindquist & Evans (1965) and in Lindquist & Moraza (1998). Notations of gland pore (adenotaxy) and poroids (poroidotaxy) follow those of Johnston & Moraza (1991) and chaetotaxy follows those of Lindquist & Evans (1965) as modified by Lindquist (1994). Both kinds of notation of idionotal systems (chaetotaxy, adenotaxy) are illustrated in figure 1A. Setal notation in parentheses is that used by Athias-Henriot (1967).

RESULTS

KEY TO GENERA

This key to the genera *Tomeogamasus* Athias-Henriot, 1971, *Ernogamasus* Athias-Henriot, 1971 and *Leptogamasus* Trägårdh, 1936 is based on the published diagnoses of genera and subgenera (Athias-Henriot 1967, 1971; Juvara-Bals, 1981) that were previously included in *Leptogamasus* Trägårdh 1936 sensu Athias-Henriot, 1971.

- 1 Podonotum with 4 setae lacking i.e. $s1(=r2)$, $r2(=r4)$, $z3(=s3)$, $s3(=s4)$; ventrianal shield with 9 pairs of ventral setae; trochanter of pedipalp with setae $v1, v2$ inserted at same level; movable digit of chelicera in female multidentate genus *Tomeogamasus* Athias-Henriot, 1971
type species: *Pergamasus falculiger* Berlese, 1906
- Podonotum with 1 or 2 setae lacking, ventrianal shield with 9-10 pairs of ventral setae; trochanter of pedipalp with setae $v1, v2$ not inserted at the same level; movable digit of chelicera in female with 4 teeth 2

- 2 Podonotum without setae $s_2 (=r_3)$ and $s_3 (=s_4)$; peritremes extending anteriorly to level of setae j_2 ; female with presternal sclerites triangular, contiguous and epigynium with 0-32 pairs of denticles; male with armature of leg II of different types: with simple, triangular spurs or differently shaped apophyses genus ***Ernogamasus*** Athias-Henriot, 1971
type species: *Pergamasus leruthi* Cooreman, 1951
- Podonotum with setae $s_2 (=r_3)$ but without seta $s_3 (=s_4)$; peritremes with different length: vestigial or reaching setae j_2 or setae r_2 ; female with presternal sclerites usually not contiguous, triangular, sometimes small sclerotized fragments between them (*L. lionsi*, *L. lossainti* excepted) and with epigynium with 0-2 pairs of denticles; male with armature of leg II simple: one apophysis and axillary process on femur and one spur on genu and another on tibia genus ***Leptogamasus*** Trägårdh, 1936
type species: *Leptogamasus suecicus* Trägårdh, 1936
- a Peritremes vestigial (Fig.1D), their length not exceeding stigmatal diameter; podonotal adenotaxy without gland pores gdz_5 and gdj_2 ; female endogynium with spherules fused; male with simple spurs on leg II or some species with big apophysis on femur and big spurs on genu and tibia subgenus ***Breviperigamasus*** Juvara-Bals, 1981
type species: *Leptogamasus semisicatus* (Athias-Henriot, 1967)
- b Peritremes exceeding stigmatal diameter (Fig.1C) or reaching setae r_2 or gland pore gdj_2 (Fig.1B); adenotaxy with gland pores gdz_5 and gdj_2 ; female endogynium with separate spherules or with different shapes of stipula and spherules; male with armature of leg II simple: spurs on genu, tibia and triangular apophysis and axillary process on femur c
- c Peritremes long, apex extending anteriorly to gland pore gdj_2 or poroid idj_1 (Fig. 3C); setae on opisthosoma long, their tips reaching the following setal row; female endogynium with two big spherules subgenus ***Holoperigamasus*** Juvara-Bals, 1981
type species: *Leptogamasus tintinellus* (Athias-Henriot, 1967)
- d Peritremes short, apex reaching seta $r_5 (=r_7)$ or $s_2 (=r_3)$; setae on opisthosoma short, their tips not reaching the following setal row; female endogynium with spherules and different shaped stipula subgenus ***Leptogamasus*** sensu stricto
type species: *Leptogamasus suecicus* Trägårdh, 1936

DESCRIPTION OF THE NEW SPECIES

***Leptogamasus (Holoperigamasus) tabacarui* sp. n.**

Type material. ROMANIA: 1 ♀ holotype, 4 ♀, 1 ♂ paratypes, Pausa Valley, tributary to Olt river (district of Râmnicu-Vâlcea), sifting of leaf litter in a beech forest, substratum gneiss, 10.09.1969, leg. I. Tabacaru.

Other material. ROMANIA: 2 ♂, 1 ♀ Cheile Bistriței (district of Râmnicu-Vâlcea), sifting of leaf litter, beech forest, 4.09.1972, leg. I. Juvara-Bals.

Diagnosis

Endogynium of female with two big, oval spherules and with two lateral denticles on inner surface of epigynium; digitus fixus of male with an indentation on mid-dorsal surface.

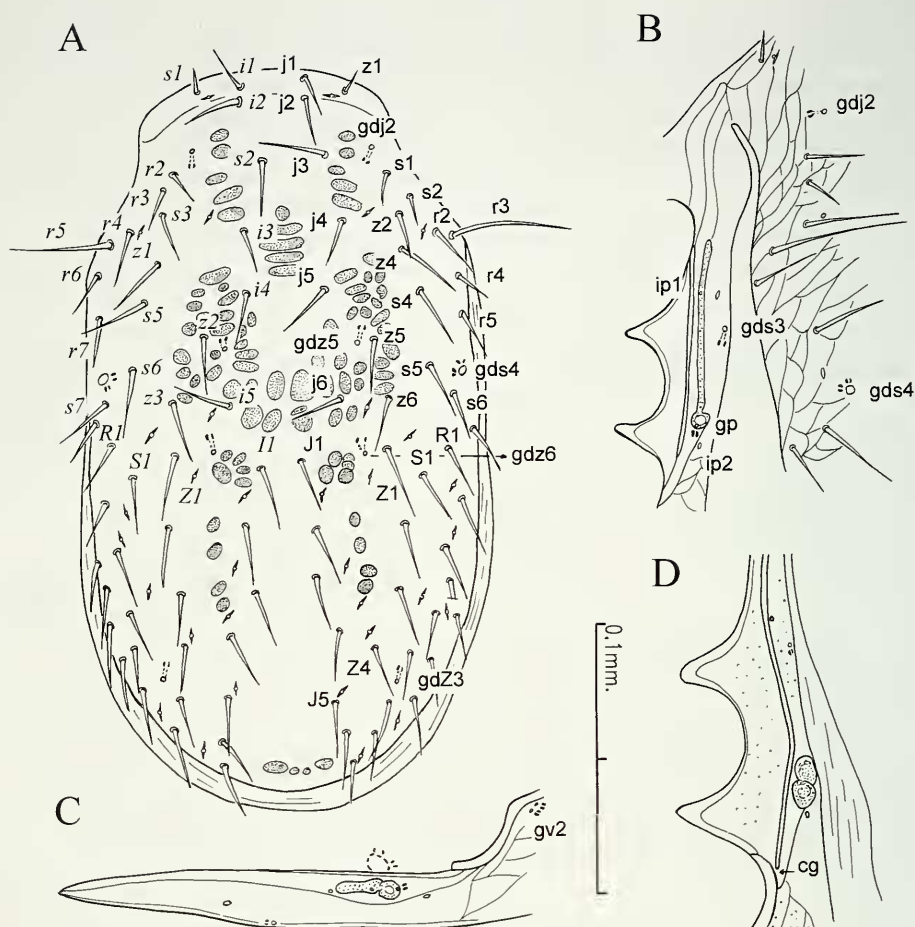


FIG. 1

A - Idiosomal dorsum of female of *Leptogamasus (Leptogamasus) variabilis* Juvara-Bals, 1981 (redrawn and modified from Juvara-Bals, 1981). Setae on the right side are labeled according to Lindquist & Evans (1965) and those of the left side according to Athias-Henriot (1967). Peritremal shield of females: B - *L. (L.) variabilis*; C - *L. (L.) Sp.* (Autriche, no. A104-MHNG); D - *L. (Breviperigamasus) seorusus* Athias-Henriot, 1972.

Description

Female

Idiosoma length 548-574 μm , color yellow-brownish. Podonotum with 20 pairs of setae, their length 53-63 μm , except for $r3 = 87-88 \mu\text{m}$, $s1 = 30 \mu\text{m}$, $s2 = 36 \mu\text{m}$, $z1 = 24 \mu\text{m}$. Opisthonotum with 27 pairs of setae, their length 60-70 μm . Adenotaxy with 5 pairs of gland pores: on podonotum $gdj2 (=gd2)$, $gds4 (=gd4)$, $gdz5 (=gd5)$ and on opisthonotum $gdz6 (=gd6)$, $gdZ3 (=gd8)$. Peritremes extending to seta $s1 (=r2)$, gland pore $gdj2$.

Idiosomal venter. Presternal sclerites triangular, with fine sclerotized lines between them and little sclerotized fragment lateral to them. Sternal shield with poly-

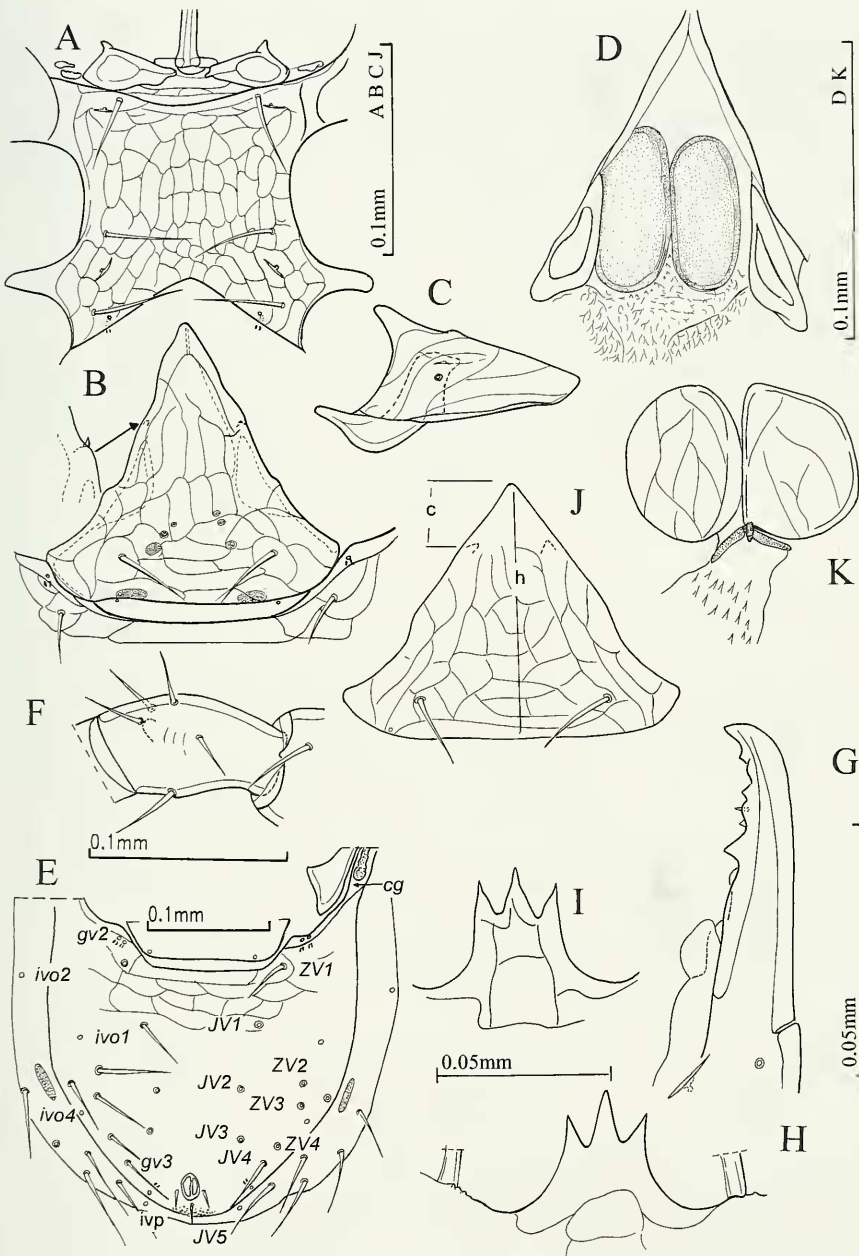


FIG. 2

Leptogamasus (Holoperigamasus) tabacarui sp. n. Female: A - sternal shield; B - epigynum; C - paragnathal shield; D - endogynium; E - opisthogastric region, cg = cingulum; F - trochanter IV, ventral view; G - digitus fixus of chelicera, antiaxial view; H - tectum. Male: I - tectum. *Leptogamasus stipulodimissus* Athias-Henriot, 1979: J - epigynum; K - endogynium. Abbreviations: c - distance between top of epigynum and lateral denticles; h - length of epigynum.

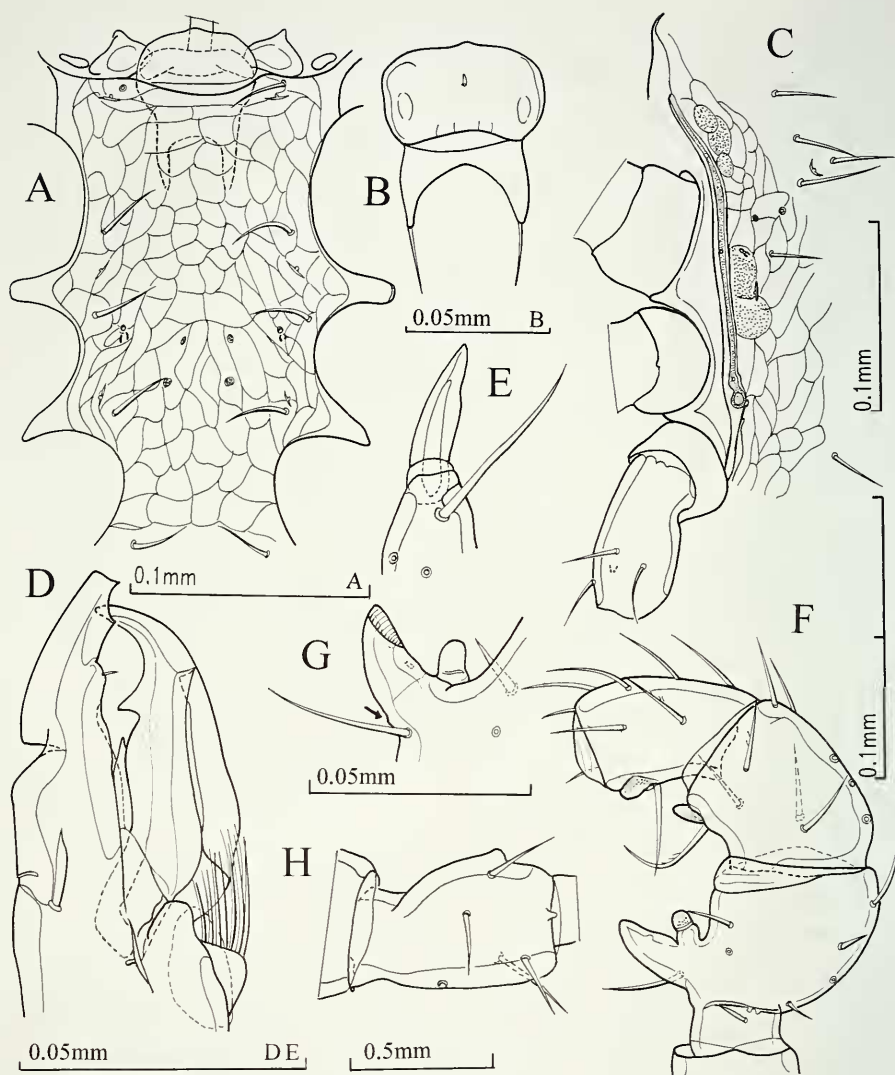


FIG. 3

Leptogamasus (Holoperigamasus) tabacarui sp. n. Male: A - sternogenital shield; B - genital lamina; C - peritrematal region; D - chelicera, antiaxial view; E - corniculus; F - leg II, femur, genu, tibia, posterior view; G - femoral apophysis and basal protuberance (arrow), anterior view; H - trochanter IV, antero-dorsal view.

gonal reticulation, gland pore $gv1$ located behind seta $st3$ (Fig. 2A); length of sternal shield = 82-85 μm ; distance between sternal setae: $st1-st1' = 70 \mu m$; $st2-st2' = 78-81 \mu m$; $st3-st3' = 86-90 \mu m$. Paragynial shield slightly reticulated, metagynial sclerite trapezoidal (Fig. 2C). Endogynium (Fig. 2D) sack-like, with two big, oval spherules covered by a membranous flap with denticles. Epigynium (Fig. 2B) triangular, bear-

ing two small lateral denticles on inner surface of its anterior part; distance between top of epigynium and location of lateral denticles (c) = 48-53 μ m; length of epigynium (h) = 134-139 μ m, st5-st5' = 72-79 μ m. Opisthogastric region (Fig. 2E). Ventrianal shield with 9 (in some specimens with 9/10) pairs of ventral setae, their length from 36 to 60 μ m; ventral setae JV5 and ZV5 inserted on soft cuticle. Setae of marginal series R5-R6 about 66-72 μ m. Adenotaxy: gv2 double, gv3 simple. Poroidotaxy: ivo1, ivo2, ivo4, ivp.

Peritrematal shield connected to ventrianal shield by "cingulum" (Fig. 2E-cg); gland pore gds3 and lyrifissure ids3 present. Peritremes groove with two lyrifissures ip1, ip2 and gland pore gp.

Gnathosoma. Tectum triramous, central prong slightly longer than lateral ones (Fig. 2H). Hypognathal groove with 11 denticulate rows, hypostomatic setae simple, palpcoxal seta slightly pilose. Chelicera: digitus mobilis with 4 teeth, digitus fixus with 2 denticles distal to pilus dentilis and with 2 other denticles proximal to it (Fig. 2G).

Legs. Trochanter IV with antero-dorsal tubercle near distal margin (Fig. 2F).

Measurements. Tarsus I = 127-132mm; tarsus IV = 156-168mm; seta pd2 (leg IV) = 87-88mm.

Male

Idiosoma length 505-522 mm. Other characteristics of podonotum and opisthonotum as in female.

Idiosomal venter. Sternogenital shield reticulated (Fig. 3A). Genital lamina rectangular with lateral margin rounded, anterior margin with small protuberance (Fig. 3B). Base of tritosternum fixed to a rectangular, transversally elongate sclerite; pre-sternal sclerites triangular, flanked by small sclerotized fragment. Gland pore gv1 near seta st3. Ventrianal shield with 9 pairs of ventral setae.

Gnathosoma: Tectum with three triangular prongs (Fig. 2I). Corniculus elongated, conical (Fig. 3E). Hypognathal groove with 9 denticulate rows; setae on hypognathum as in female. Palptrochanter with v1 simple and v2 pilose. Chelicera (Fig. 3D): digitus fixus with an indentation in middle of its dorsal surface, with a truncate apex, and its ventral surface with a tooth distal to pilus dentilis; digitus mobilis with one tooth in its distal quarter and with a long spermatotreme reaching mid-distance between tooth and apex.

Legs. Armature of leg II as shown in figure 3F-G. Near base of femoral apophysis small protuberance (Fig. 3G-arrow); apophyses on genu and tibia triangular. Tarsus IV with small protuberance located on antero-dorsal face (Fig. 3H).

Measurements. Tarsus I = 119mm; tarsus IV = 140-144mm.

Etymology

Leptogamasus tabacarui sp.n. is named in honour of my friend and colleague Dr I. Tabacaru (Institute of Speology "E. Racovitza", Bucharest) who has continuously provided material for study.

Discussion

The following species are included in the subgenus *Holoperigamasus*: *L. septimellus* (Athias-Henriot, 1967), *L. tintinellus* (Athias-Henriot, 1967), *L. bicorniger* Witalinski, 1977, *L. stipulodimissus* Athias-Henriot, 1979 and *L. tabacarui* sp. n.

Males of the four known species are separated by the shape of the chelicerae. The male of *L. tabacarui* sp. n. is easily recognized by having the mid-dorsal surface of its digitus fixus identate (Fig. 3D). The females can be distinguished by the presence or absence of denticles on the epigynium and by the shape of the endogynium. *L. tabacarui* sp. n. has two lateral denticles on the inner side of the epigynium and an endogynium formed by two big spherules.

The female of *L. tabacarui* sp. n. resembles the females of *L. stipulodimissus* Athias-Henriot described from Ukraine. The specimen of *L. stipulodimissus* Athias-Henriot found in the Athias collection (paratype-SU62/AH530) differs from *L. tabacarui* sp. n. by a thickening at the base of spherules (Fig. 2K), by the shape of the epigynium, a much sharper protuberance on trochanter IV and the following measurements: epigynium (Fig. 2J): distance $c = 30\ \mu\text{m}$, $h = 125\ \mu\text{m}$, $st5-st5' = 96\ \mu\text{m}$; sternal shield: length $= 84\ \mu\text{m}$, $st1-st1' = 74\ \mu\text{m}$, $st2-st2' = 90\ \mu\text{m}$, $st3-st3' = 96\ \mu\text{m}$; tarsus I $= 144\ \mu\text{m}$, tarsus IV $= 168-180\ \mu\text{m}$.

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